REMARKS

In response to the June 16, 2006 Notice of Non-Compliant Amendment, Applicants are providing the following remarks regarding the subject matter of previously presented claims 30 and 31. Accordingly, entry of the response and prompt favorable reconsideration are respectfully requested.

Independent Claim 30

In Terasawa (U.S. Pat. No. 6,002,143, hereinafter "Terasawa"), there is no disclosure or suggestion of an insulating film disposed at a limited area of and on a top surface of a reception layer as claimed. An example of an insulating film is shown by in Fig. 1, reference numeral 70 of the present application, which is disposed at a limited area of and on a top surface of the reception layer 20.

Therefore, Terasawa, fails to disclose or remotely suggest a carrier-supplying region made of the second semiconductor, disposed only on the insulating film, being laterally contacted with claimed barrier-forming layer and configured to supply the carriers to the barrier-forming layer.

Accordingly, independent claim 30 is patentably distinct over the art of record.

Independent Claim 31

In Terasawa, there is no disclosure or suggestion of a band-edge discontinuity barrier having the barrier height ΔEc (as shown in Figs. 2A-2C of the present application), on which carriers cannot surmount. The band-edge discontinuity barrier is formed at a heterojunction interface between the first and second semiconductors, such that the gate electrode disposed on the gate insulating film can change a tunneling probability of the carriers, which are configured to be injected into the reception layer by tunneling through the band-edge discontinuity barrier, by controlling a width of the band-edge discontinuity barrier.

According to Terasawa at col. 5, line 53 through col. 6 line 18 and col. 9 lines 41-46, it should be apparent that the claimed tunnel-injection device is operating with an absolutely different principle from the conventional MOSFET as described in Terasawa. In the present claimed device, the current flowing between the source electrode and drain electrode is controlled by the tunneling probability penetrating through the energy barrier ΔEc formed at the heterojunction interface between the first and second semiconductors, as shown in Figs. 2A to 2C. In contrast, Terasawa discloses that the heterojunction interface, formed between the P^+ type silicon layer 13 and the N^- silicon carbide layer 12, cannot function in such a way as to control the tunneling injection current, which penetrates through the energy barrier ΔEc formed at the heterojunction interface between the claimed reception layer and barrier-forming layer. Terasawa merely provides a structure in which the N type diffusion layer 41 is formed in the surface region of the silicon carbide layer 12 adjoining the silicon substrate 11 so that the depletion layer formed at the P^+N^- junction cannot spread beyond the boundary between the bulk portion of the silicon carbide layer 12 and the N type diffusion layer 41. As such, the depletion layer having a maximum electric field is formed within the same crystal without any crystal incommensurate structure, i.e. within the silicon carbide crystal. See col. 9, line 66 through col. 10, line 9.

Accordingly, independent claim 31 is patentably distinct over the art of record.

It is believed that all pending claims are now in condition for allowance. Applicants therefore respectfully request an early and favorable reconsideration and allowance of this application. If there are any outstanding issues which might be resolved by an interview or an

Examiner's amendment, the Examiner is invited to call Applicants' representative at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP

Brian K. Seidleck
Registration No. 51,321

Please recognize our Customer No. 20277 as our correspondence address.

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 BKS:idw
Facsimile: 202.756.8087
Date: July 17, 2006